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REPORT ON  
INDUCED POLARIZATION SURVEY  
ON PROPERTY OF

NORCAN MINES LIMITED  
OMINECA MINING DIVISION  
SMITHERS, BRITISH COLUMBIA

SULMAC EXPLORATION SERVICES LIMITED

SEPTEMBER 16, 1966

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### Maps in Pockets:

#### Grid No. -1

"Chargeability" Map # 1  
"Resistivity" Map # 5

#### Grid No. -2

"Chargeability" Map # 2  
"Resistivity" Map # 7

*Chargeability Location Map # 3*  
*Resistivity Location Map # 6*

(Scale: 1 Inch = 200 Feet)

## INTRODUCTION

During the period July 22, 1966, to August 14, 1966, an induced polarization (I.P.) survey was carried out over the property of Norcan Mines Limited, located some 23 miles north-east of Smithers, in the Omineca Mining Division, British Columbia.

The survey was conducted by a four-man geophysical crew provided by Salmac Exploration Services Limited.

Picket lines for the survey were spaced at 200 foot intervals, and were established prior to the commencement of the I.P. survey. Readings were obtained every 100 feet along these lines.

The data obtained are presented on the accompanying maps at a scale of 1 inch to 200 feet.

## SUMMARY AND RECOMMENDATIONS

An induced polarisation survey was carried out over the property of Norcan Mines Limited, near the town of Smithers in the Omineca Mining Division, British Columbia. The survey indicated two anomalous zones of major interest, six of minor interest, and a number of isolated peaks.

The major anomalies are listed as follows:

The first, on Grid # 2,

Line # 16 15 to 55  
Line # 17 19 to 73

possibly extending through to

Line # 20 3N to 6S  
Line # 22 6N to 5S.

This anomaly likely continues eastward beyond the surveyed area.

The second, on Grid # 1,

Line # 4 2N to 8E  
Line # 5 1W to 3E  
Line # 7 0+00 to 3E.

The minor anomalies are outlined as follows in order of their importance; the most significant being described first:

Grid # 2

1. Line # 7 14N  
Line # 8 12N to 16N

This anomaly may extend to the north.

2. Line # 17 5N to 5E
3. Line # 3 5N to 1N

Grid # 1

4. Line # 1 9W  
Line # 4 9W  
Line # 6 6W  
Line # 7 7W

- .. Line # 8 SE to 9E
- 1. Line # 12 SW to SW

The isolated high peaks are listed as follows with the most important noted first:

- Grid # 2
- 1. Line # 11 7W
  - 2. Line # 11 11 W
  - 3. Line # 1 7S
  - 4. Line # 7 5S

- Grid # 1
- 5. Line # 11 5W

It is recommended that both major anomalies be tested by drilling to determine whether or not economic sulphide mineralization is present.

The first anomaly has a chargeability peak of 55.2 milliseconds which represents 12 to 20% sulphides by volume. The second has a peak value of 8.1 milliseconds which represents 0.8 to 2% sulphides by volume.

It is further recommended, that if drill results from the major anomalies prove to be of economic importance, the minor anomalies and possibly the isolated highs, be surveyed by the induced polarization method utilizing a 400 foot electrode spacing with 100 foot station intervals. This, correlated with the results of the first survey, will define the depth, linear extent, and percentage of sulphide mineralization.

PROPERTY LOCATION AND ACCESS

The property of Norcan Mines Limited, discussed in this report, consists of some 196 contiguous mining claims. Two areas within the property were surveyed. The linesystems are named; the "Santa Marie Grid" and the "War Eagle Grid". The first is also known as Grid # 1, and the latter as Grid # 2.

The claims in Grid # 1 are:

PR 37	--	34315;
PR 39	--	34317;
PR 69	--	34347;
PR 70	--	34348;
PR 71	--	34349;
PR 72	--	34350;
PR 102	--	34380; and
PR 104	--	34382.

The claims in Grid # 2 are:

SQ 15	--	37500;
SQ 16	--	37501;
SQ 17	--	37502;
SQ 18	--	37503;
SQ 19	--	37504; and
SQ 20	--	37505.

The relative location of the two grid systems is shown on the accompanying index map. The claims are located some 23 miles S20°W of Smithers.

Access to the property is by helicopter from Smithers.

## METHOD OF SURVEY AND INSTRUMENT DATA

### Electrode Array

The data were obtained using the "three-electrode" array. This array consists of one current ( $C_1$ ) and two potential electrodes ( $P_1$  and  $P_2$ ) which are moved together along the survey line, the spacings between these three electrodes being fixed. The second current electrode ( $C_2$ ) is placed at "infinity".

Readings were taken at 100 foot intervals with a 200 foot electrode spacing.

### I.P. Instrument

The instrument used was of the pulse-type and is similar in design and operation to that described by R.W. Baldwin in "A Decade of Development in Overvoltage Survey", A.I.M.E. Transactions, Vol. 214, 1959. Power for the unit is obtained from a Briggs and Stratton 4 H.P. motor coupled to a 400 c.p.c. generator, which provides a maximum of 1500 watts d.c. to the ground. The cycling rate is 1.5 seconds current on and 0.5 seconds current off, the pulses reversing continuously in polarity. The data collected consist of measurements of the current ( $I$ ) flowing through  $C_1$  and  $C_2$ , and of the primary voltage

( $V_p$ ) between  $P_1$  and  $P_2$  during the "current on" period. During the "current off" period the overvoltage appearing between  $P_1$  and  $P_2$  is measured. This gives a measurement of the polarization ( $V_p$ ) in milliseconds. The "apparent resistivity" in ohm-meters is obtained by dividing the primary voltage  $V_p$  by the current  $I$ , and multiplying by a proportionality factor which depends on the geometry of the array used.

#### I.P. Data

The survey was conducted over two groups of claims, each with a 200 foot line spacing and 100 foot station intervals. However, the lines on Grid # 1 are established in an east-west direction, while on Grid # 2 they run north-south. A total of 29.4 miles of I.P. survey was conducted. The results of the survey are shown on contour maps of "chargeability" and "resistivity" at a scale of 200 feet to an inch.

#### DISCUSSION OF RESULTS

On the "chargeability" and "resistivity" maps the major anomalies are shown as shaded areas, while the minor anomalies are circled and numbered in order of their significance. In addition to these zones, a number of isolated peaks were indicated, however these have not been designated individually.



The resistivity in the area is generally fairly uniform and shows moderate variation which, it is considered, corresponds to changes in the type or thickness of the overburden. A number of high peaks are to be noticed throughout the area. It is thought that these are due to a relatively shallow source such as near-surface bedrock. Moreover on Grid # 2, Lines 20 - 23 the resistivity results possibly indicate a shear zone or a fault-system.

The T.P. data indicate that the background value of chargeability for the surveyed area is one milli-second. Areas which showed anomalous characteristics, i.e. "chargeability" values of three times higher than background or better, were selected for drilling, in the case of major anomalies, or for detailed surveying, in the case of minor anomalies. These anomalous zones are depicted on the accompanying chargeability and resistivity maps.

The main anomalous area is located on Grid # 2 on lines 15 - 23. Analysis of the chargeability contours, seems to indicate the anomaly is probably caused by mineralization in varying concentrations, such as would be found across a shear or fault-zone.

The second major anomaly is on Grid # 1. It would appear that it is either a zone of weaker sulphide mineralization with little content to depth or it has a causative body of stronger mineralization at depth. Similarly, the minor anomalies could be caused by weak sulphide mineralization in small fracture systems, or be halos of larger bodies at depth. However, drilling, and a detailed survey are required before any definite conclusions can be reached regarding the full potential of the mineralized zones.

In conclusion, two main anomalous zones and six minor ones have been located, the former require drilling, and the latter a detailed survey to test the depth, concentration, and linear extent of sulphide mineralization.

Respectfully submitted,  
SULSAC EXPLORATION SERVICES LIMITED

G.M. White, B. Sc.,  
Geophysicist.

*files*

SUMMARY COSTS - IP SURVEYS

Details of Costs:

Wages - Norcan Mines Ltd.(NPL) to linecutting etc.

<u>Personnel</u>	<u>Period</u>	<u>Rate</u>	<u>Total</u>
W.D. Thompson	July 1-Aug 15/66	\$1000/mo.	\$ 1500
T. Kellis	July 1-Aug 15/66	650/mo.	219
A. Crout	July 1-Aug 15/66	700/mo.	300
M. Pete	July 1-Aug 15/66	700/mo.	353
E. Greer	July 1-31/66	750/mo.	<u>775</u>
			\$ 3147

Helicopter Charges:

11 3/4 hr. at \$130 per hour \$ 1500

Contractor Charges:

Sulmac Exploration \$ 7753

Total Charges \$12,400

DOMINION OF CANADA:  
 PROVINCE OF BRITISH COLUMBIA:  
 To Wit:

In the Matter of costs applicable to assessment work on the Howson Basin property of Norcan Mines Ltd. (N.M.L.) incurred during 1966 for I.P. Surveys

I, Stanley John Hunter

of 6476 Sherwill St. Vancouver, B.C.

in the Province of British Columbia, do solemnly declare that the following costs were incurred by Norcan Mines Ltd. in their exploration of the Howson Basin property during 1966 for I.P. Surveys

charges: Sulmon Exploration \$ 7753  
 Norcan Mines Ltd. - Kelowna 3147  
 Helicopters 1500  
 Total \$ 12,400

Allocation:

CLAIMS	FEET OR MINS	COSTS	GROUP
SG 16, SG 17	30,000	\$ 5160	NAR BARGE
WY 14, WY 15, SG 16	10,000	1740	HOUSING utility
PR 22, PR 24	16,000	2750	BUSINESS
PR 23, PR 25, PR 26	16,000	2750	SANTA MARIN
	72,000 ft.	\$ 12,400	

Norcan Kelowna charges

PERSONNEL	PERIOD	RATE	TOTAL
W. D. THOMPSON	JULY 1 - AUG 15/66	\$ 1000/mo	\$ 1500
T. KELLS	JULY 1 - AUG 15/66	600/mo	210
P. CROFT	JULY 1 - AUG 15/66	700/mo	510
M. PETE	JULY 1 - AUG 15/66	200/mo	353
P. NISGA	JULY 1 - 31/66	750/mo	175
			\$ 3,47

HELICOPTER  
 11 3/4 hr at 130 per hour = \$ 1500

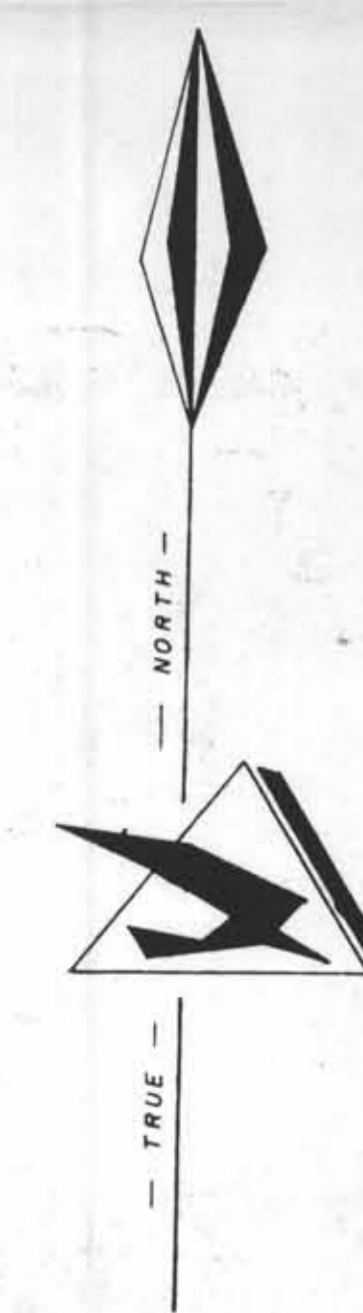
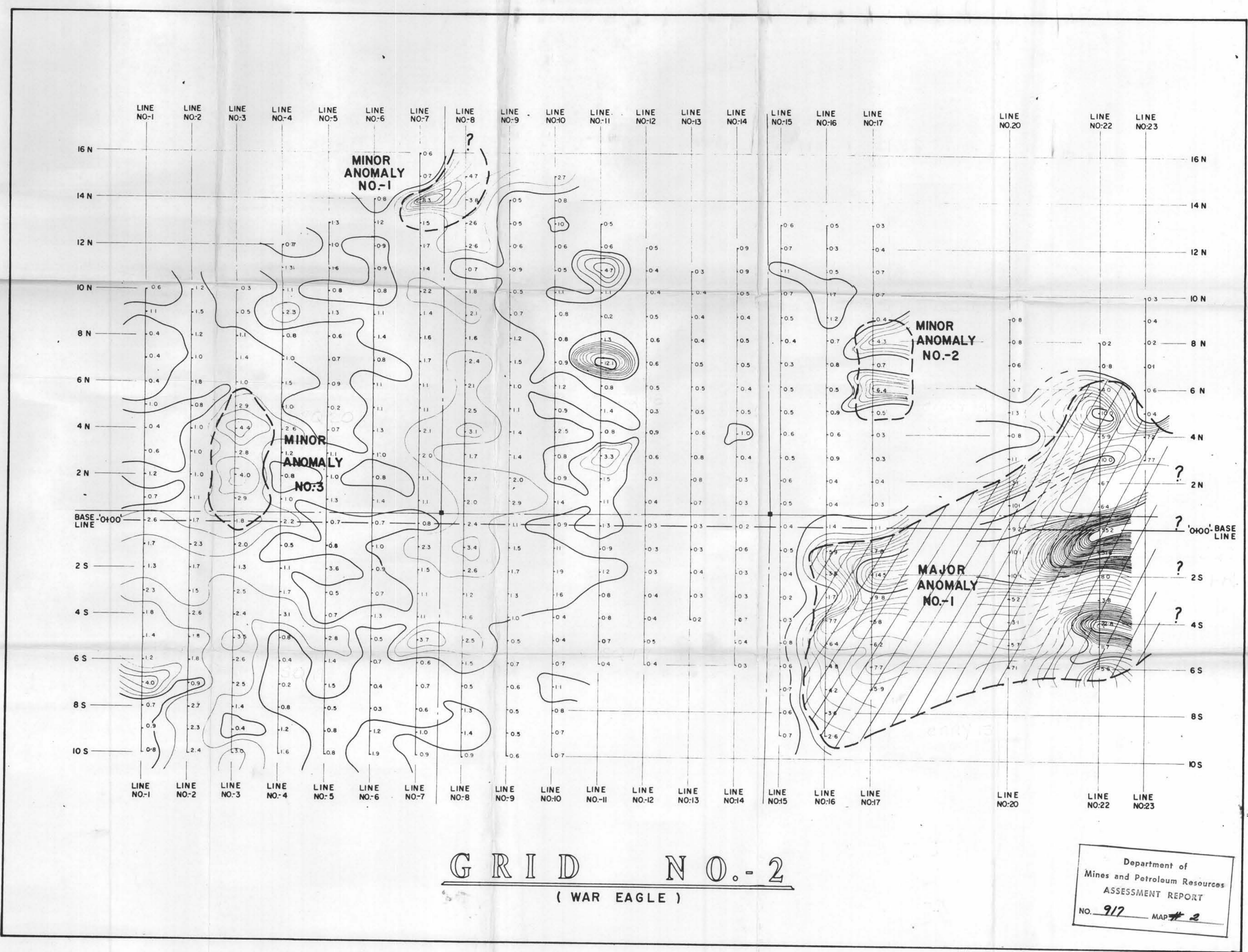
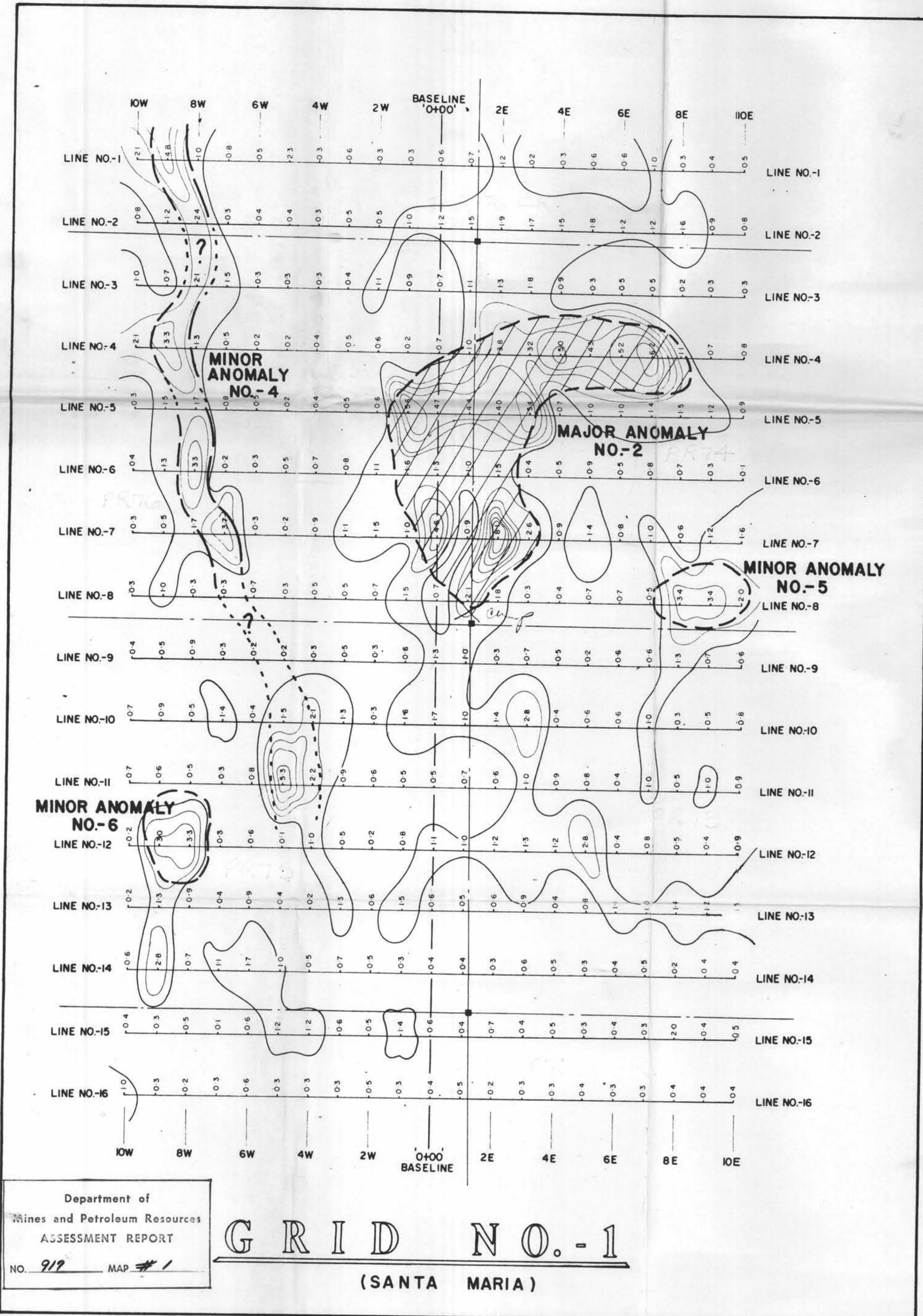
And I make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath and by virtue of the "Canada Evidence Act."

Declared before me at the City  
 of Vancouver, in the  
 Province of British Columbia, this 13th  
 day of March, A.D.  
 1967

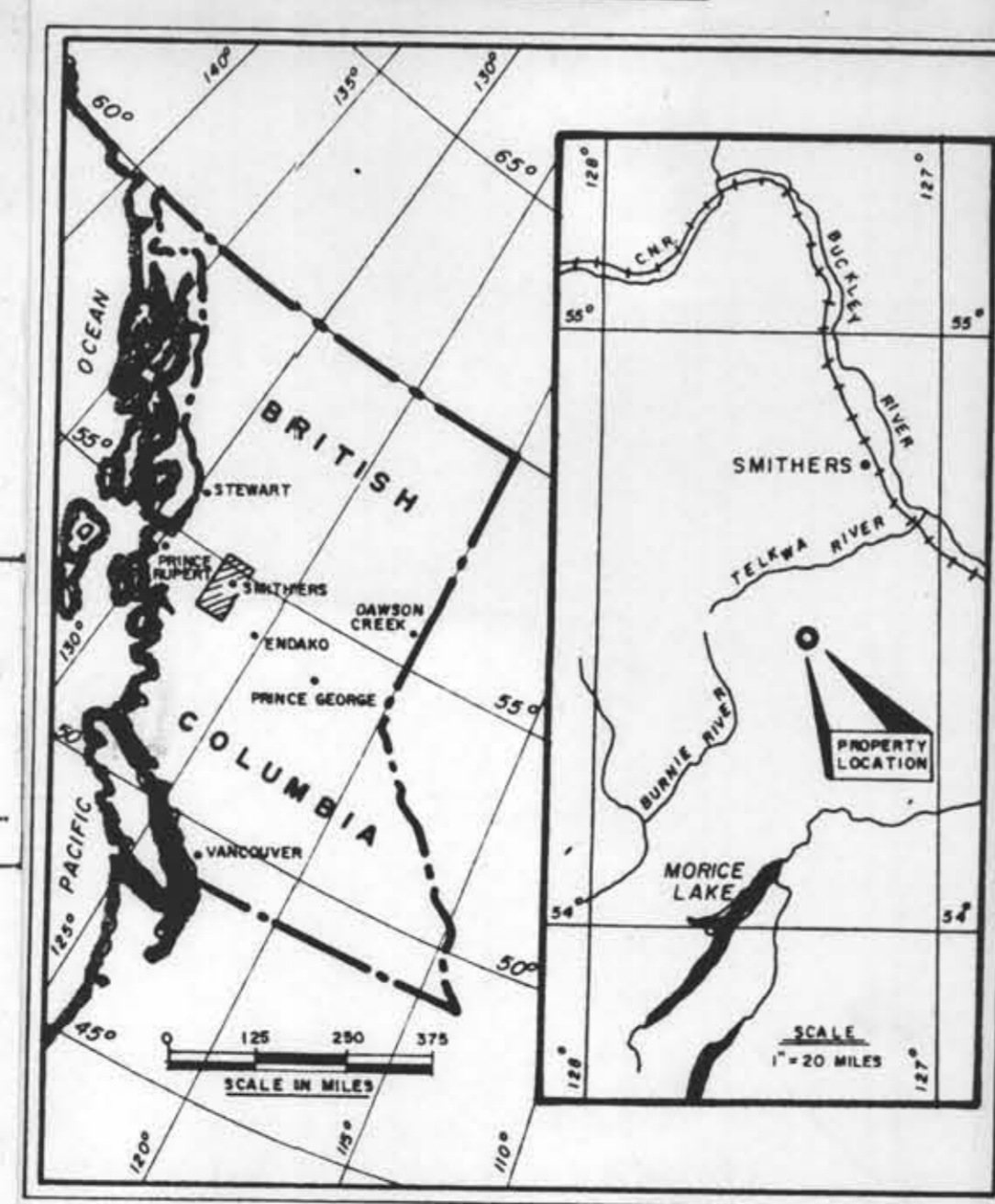
Stanley John Hunter

*[Signature]*

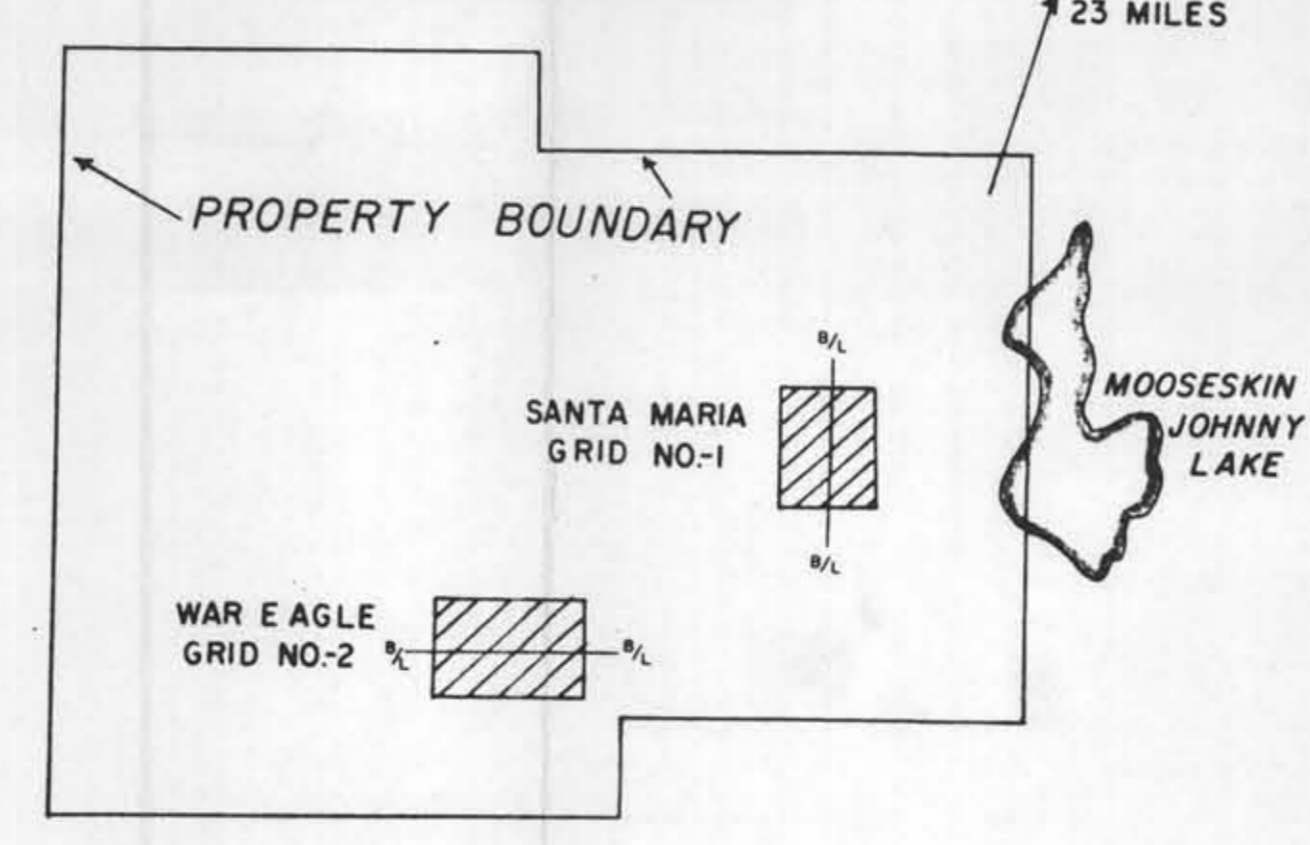
A Commissioner for taking Affidavits within British Columbia or  
 A Notary Public in and for the Province of British Columbia.



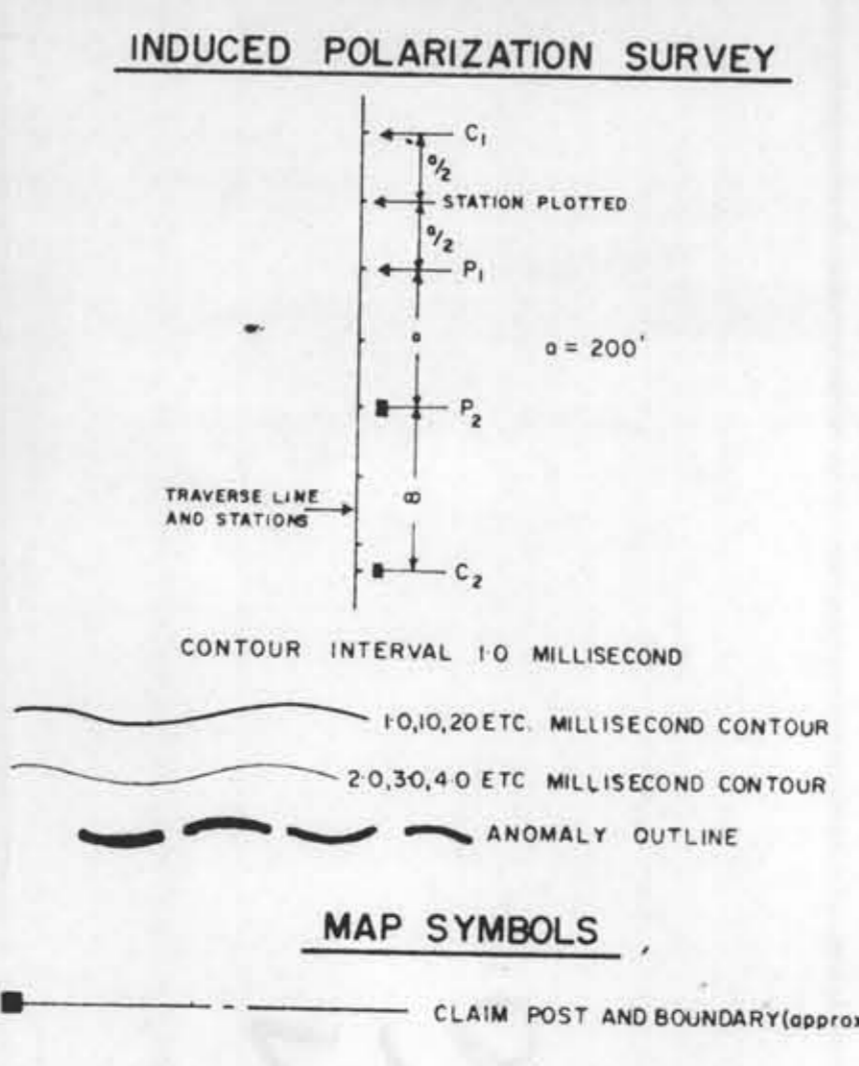
**LOCATION MAP**



**GRID LOCATION MAP**



**LEGEND**

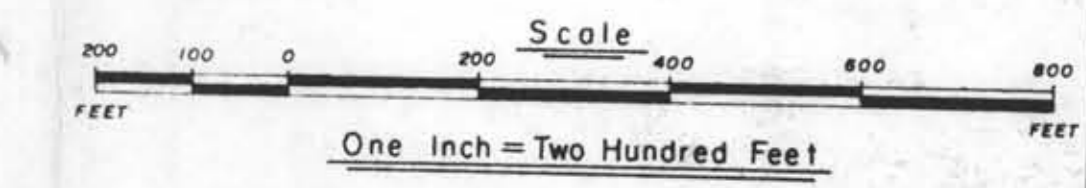


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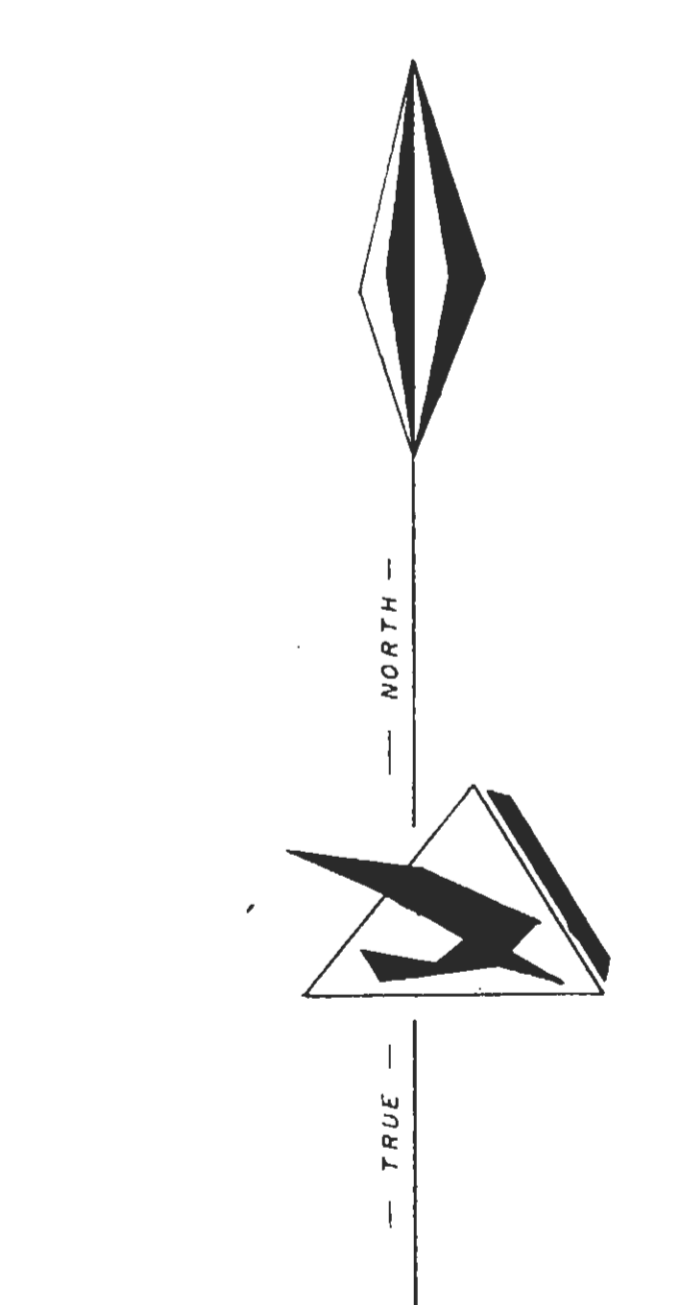
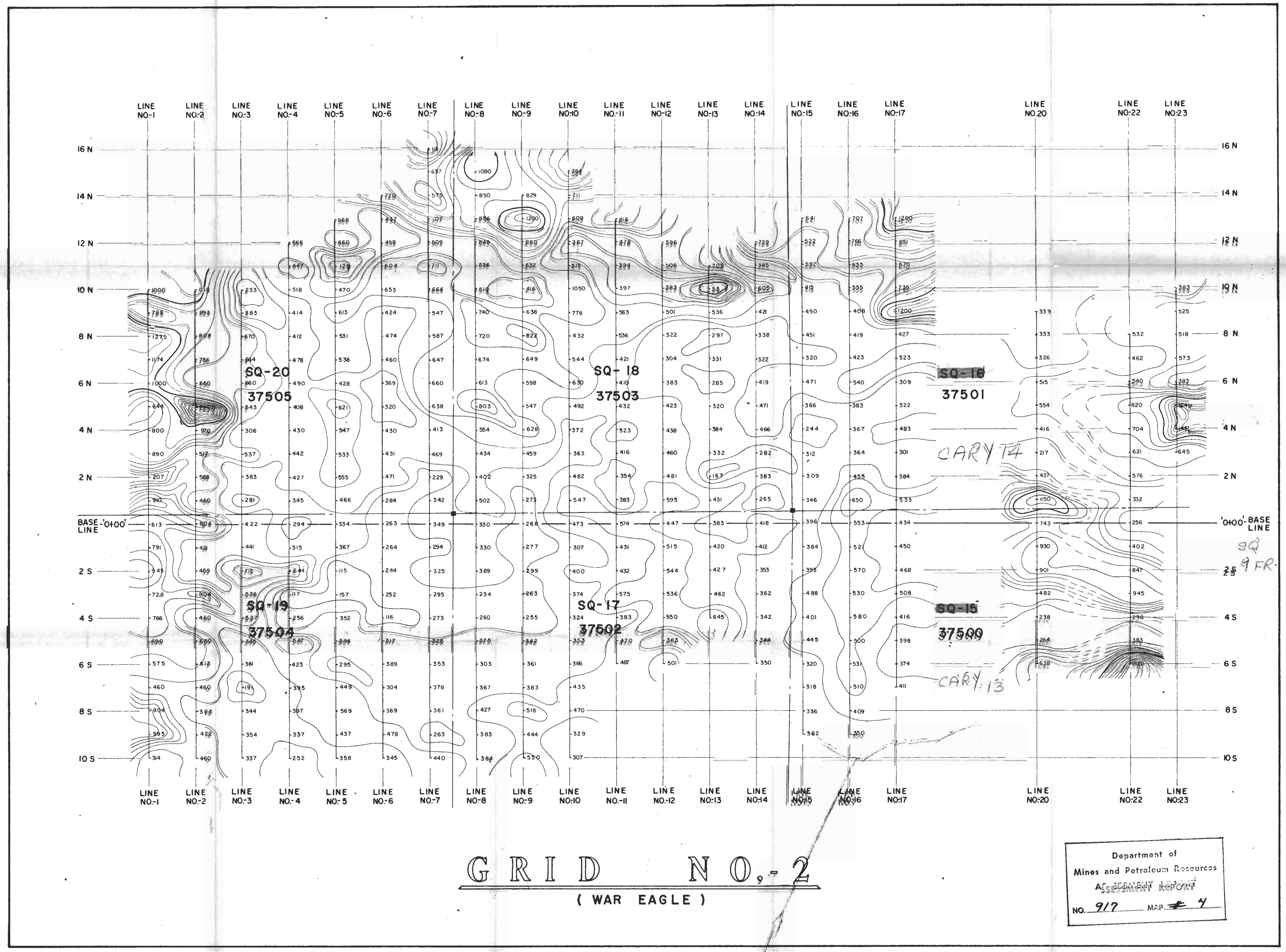
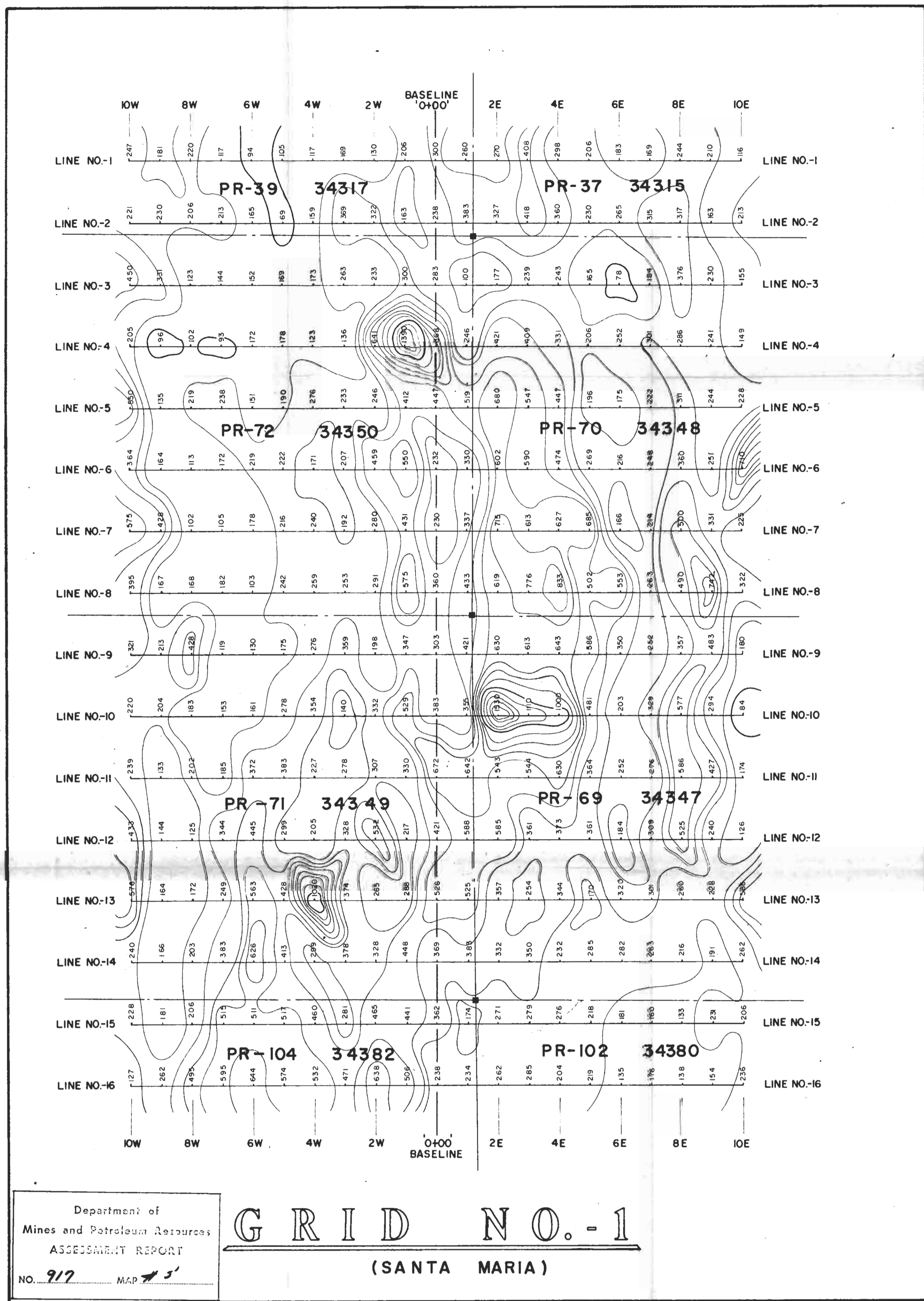
**INDUCED POLARIZATION SURVEY**  
**APPARENT CHARGEABILITY**

SULMAC EXPLORATION SERVICES LIMITED  
JUL. AUG. - 1966

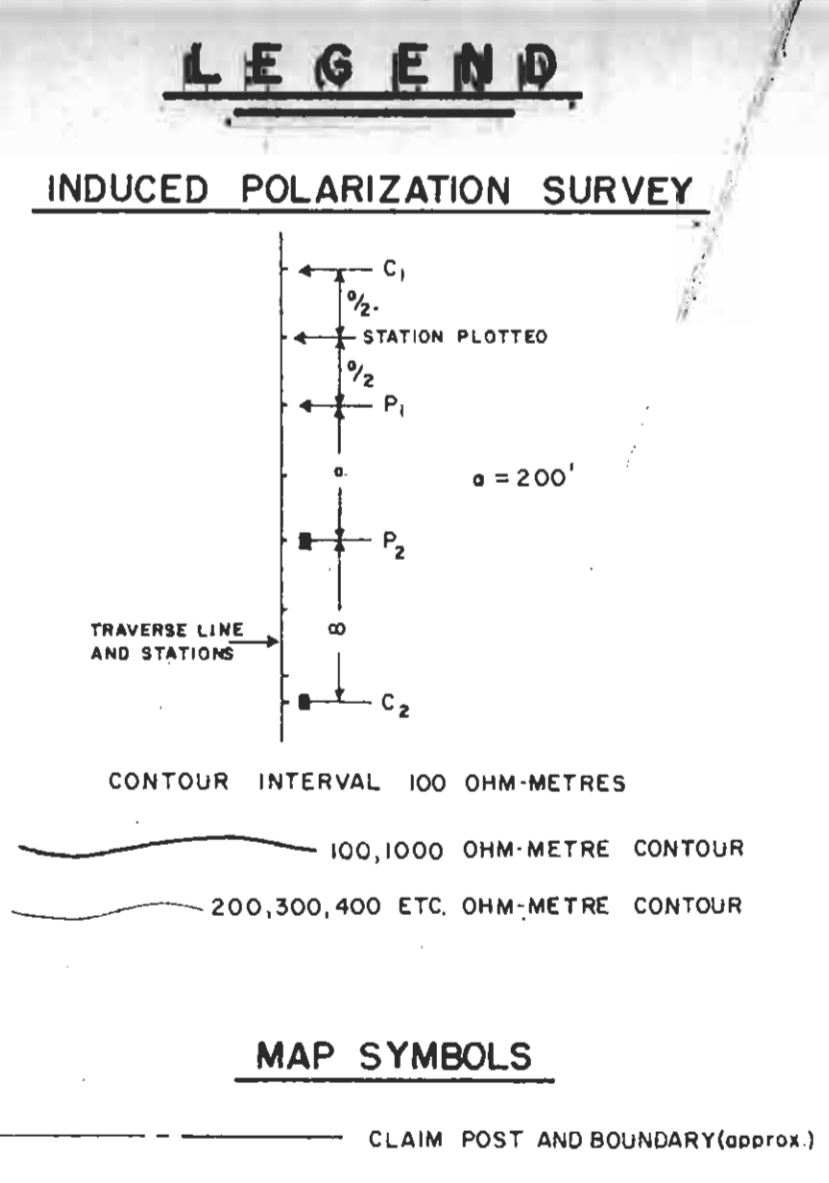
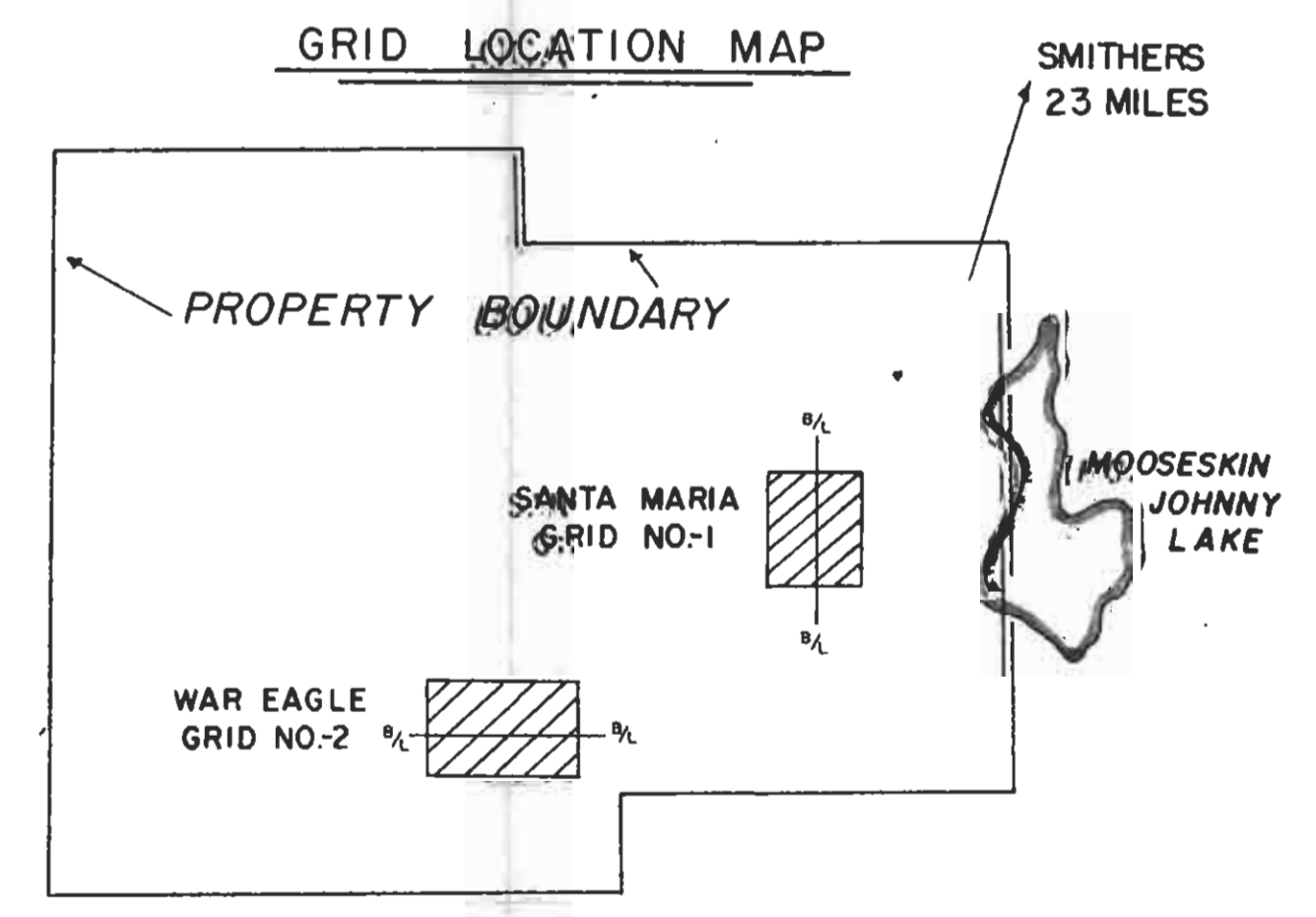
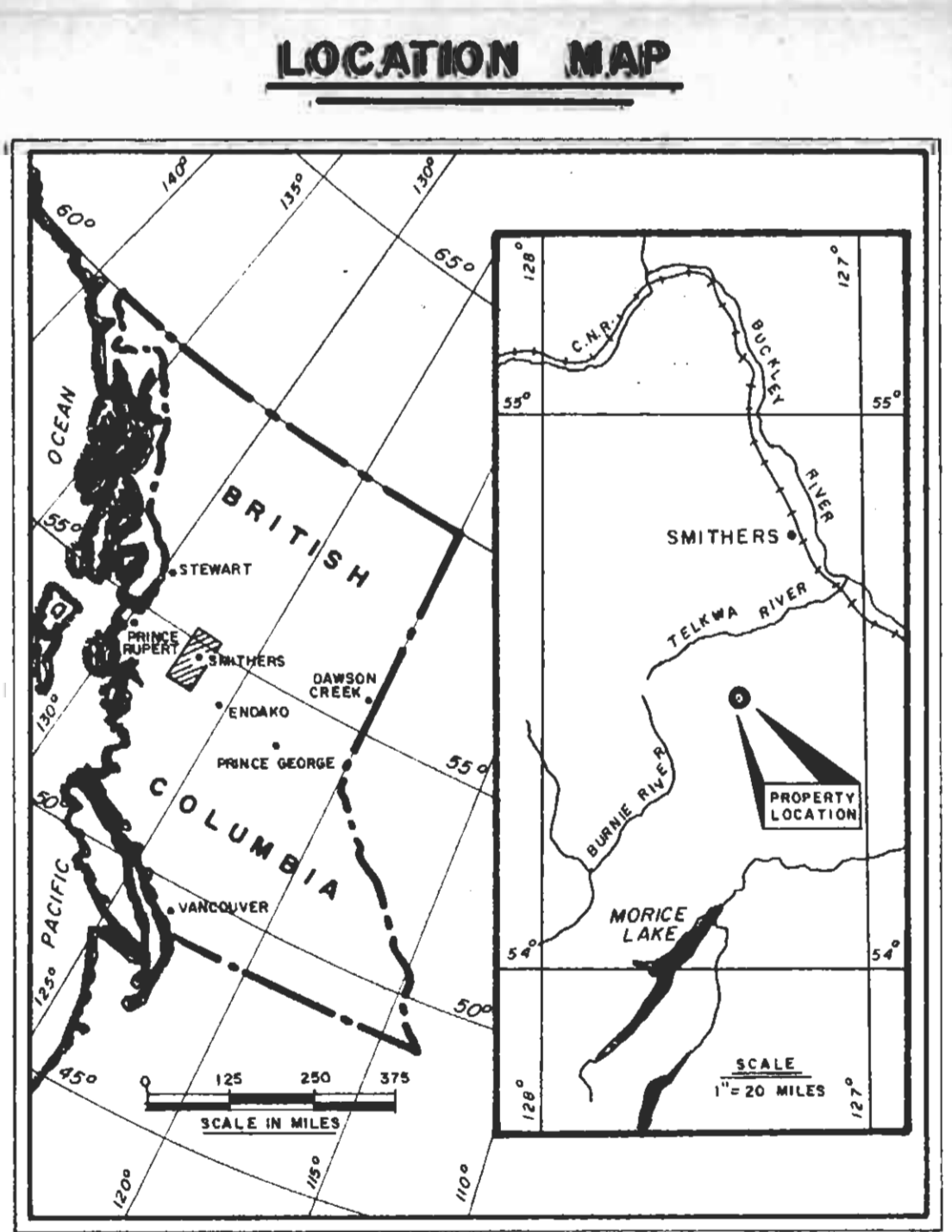
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TO ACCOMPANY REPORT BY GLEN WHITE, DATED SEPT. 16, 1966



Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. 917 MAP # 6



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INDUCED POLARIZATION SURVEY  
APPARENT RESISTIVITY



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